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PHOTOGRAPHIC INTERPRETATION REPORT

PEI-CHING COMMUNICATIONS FACILITIES
CHINA

SECTION I: MICROWAVE

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NOVEMBER 1967

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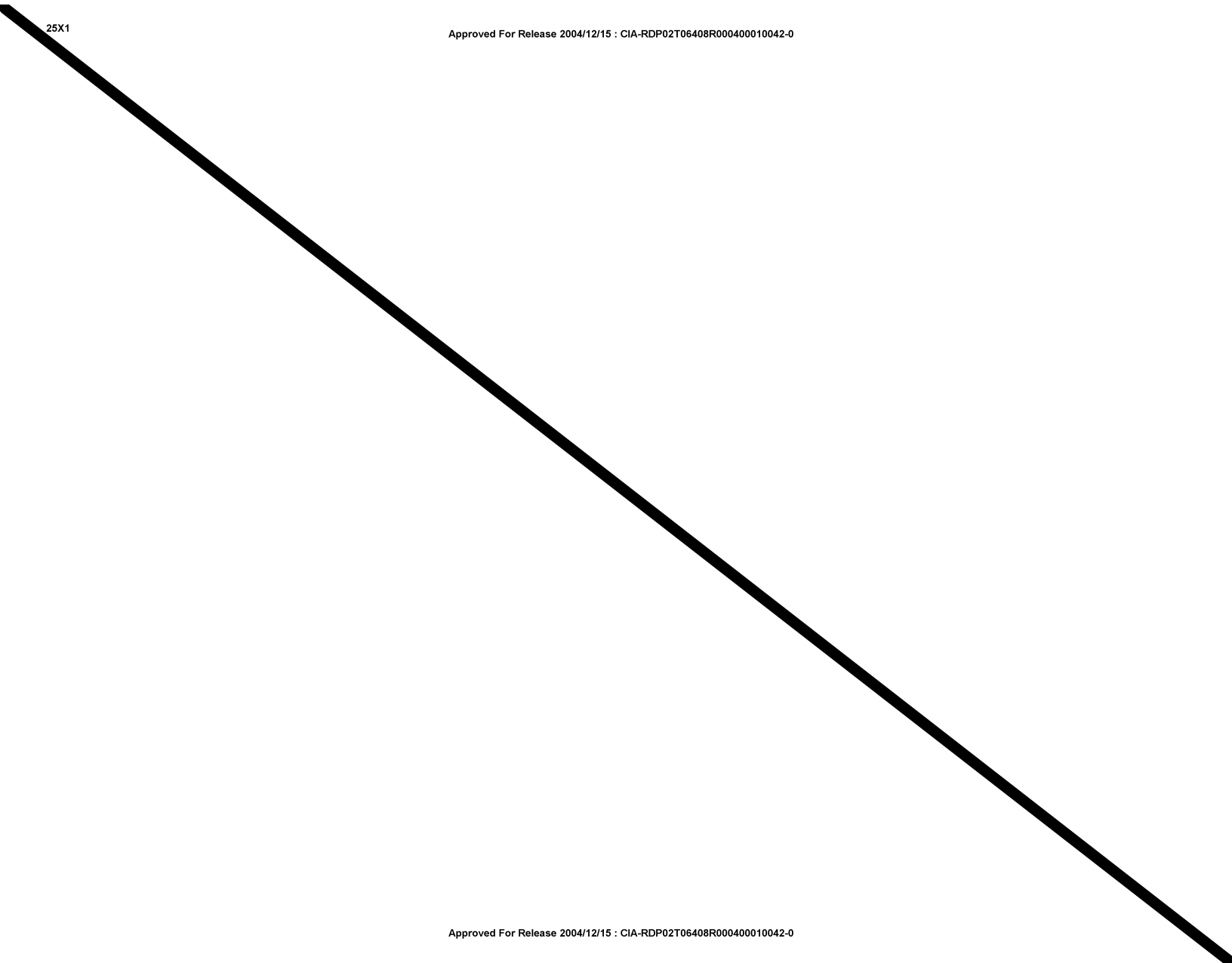

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PHOTOGRAPHIC INTERPRETATION REPORT

PEI-CHING COMMUNICATIONS FACILITIES
CHINA

SECTION I: MICROWAVE

NOVEMBER 1967

NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

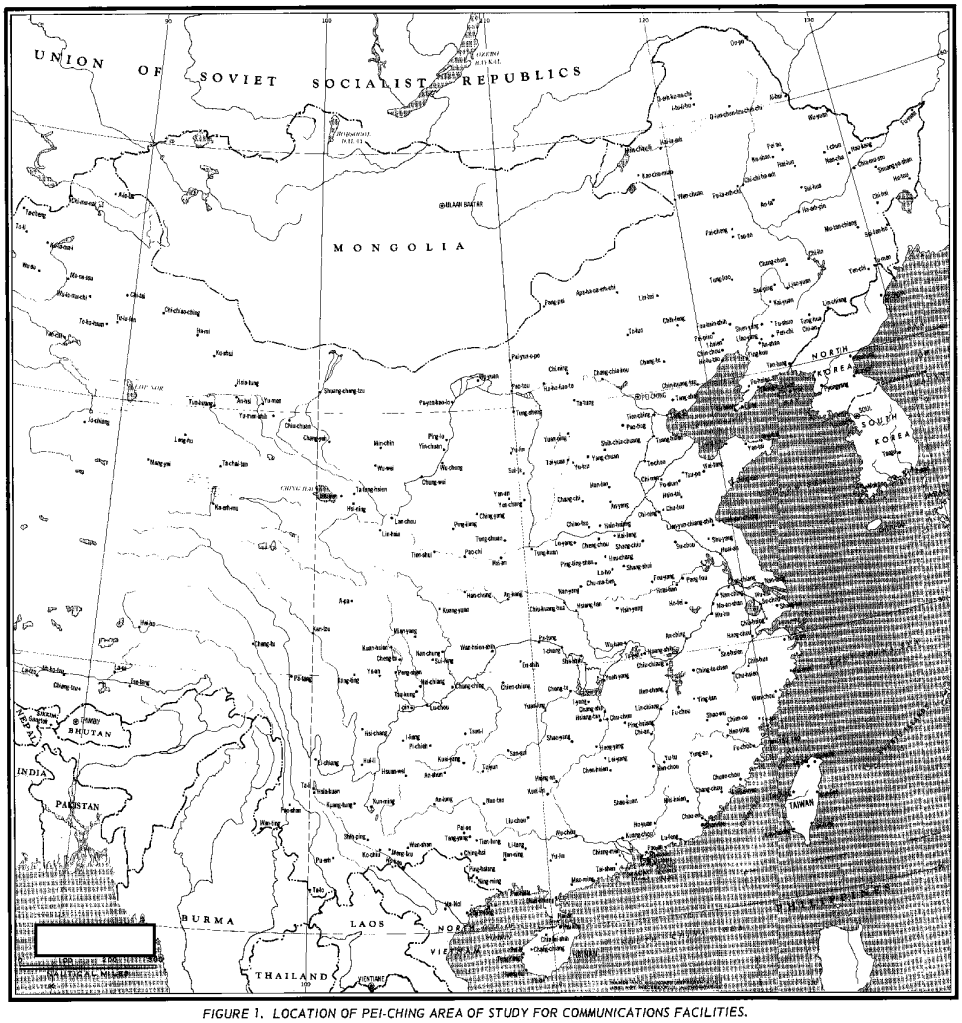

FIGURE 1. LOCATION OF PEI-CHING AREA OF STUDY FOR COMMUNICATIONS FACILITIES.

INTRODUCTION

25X1 [redacted] a detailed study of the communications facilities within 30 nautical miles (nm) of Pei-ching, China (Figure 1) was performed within the limits of the available [redacted] photography. Available ground photography is used to support the aerial photographic coverage. Microwave relay routes extending outside the 30 nm study area are projected until continuity is lost due to the lack of adequate photography. The areas of adequate photography are shown on Figure 2. 25X1

Numerous microwave facilities, high frequency (HF) communications facilities, and civil radio and television stations were identified in the area of interest. To facilitate logical analysis of the facilities and stations, this report is divided into 3 sections: Section I describes the microwave facilities; Section II describes the HF communications facilities; and Section III describes the civil radio and television stations, and miscellaneous facilities.

All photographic mensurations have been accomplished by the NPIC Technical Intelligence Division. Accuracy figures are included parenthetically after each measurement. Where the photographic interpretability has precluded accurate mensuration, the measurements are included as approximations. Some geographic coordinates and antenna azimuths have been plotted on 200 series US Air Target Charts, and are accurate within the parameters of the map or chart and the topographical/cultural details on them. The accuracy of such data is included in footnotes.

SECTION I: MICROWAVE FACILITIES

INTRODUCTION

Two microwave terminal facilities have been identified within the city of Pei-ching, 1 is on the top of the Post and Telecommunications Building and the other is on the Radio Broadcasting Building. The terminal facility on the Post and Telecommunications Building is associated with the Pei-ching–Pao-ting and the Pei-ching–Tien-ching microwave relay routes. The terminal on the Radio Broadcasting Building is considered to be associated with local radio/television relay and remote broadcast pickup. 25X1

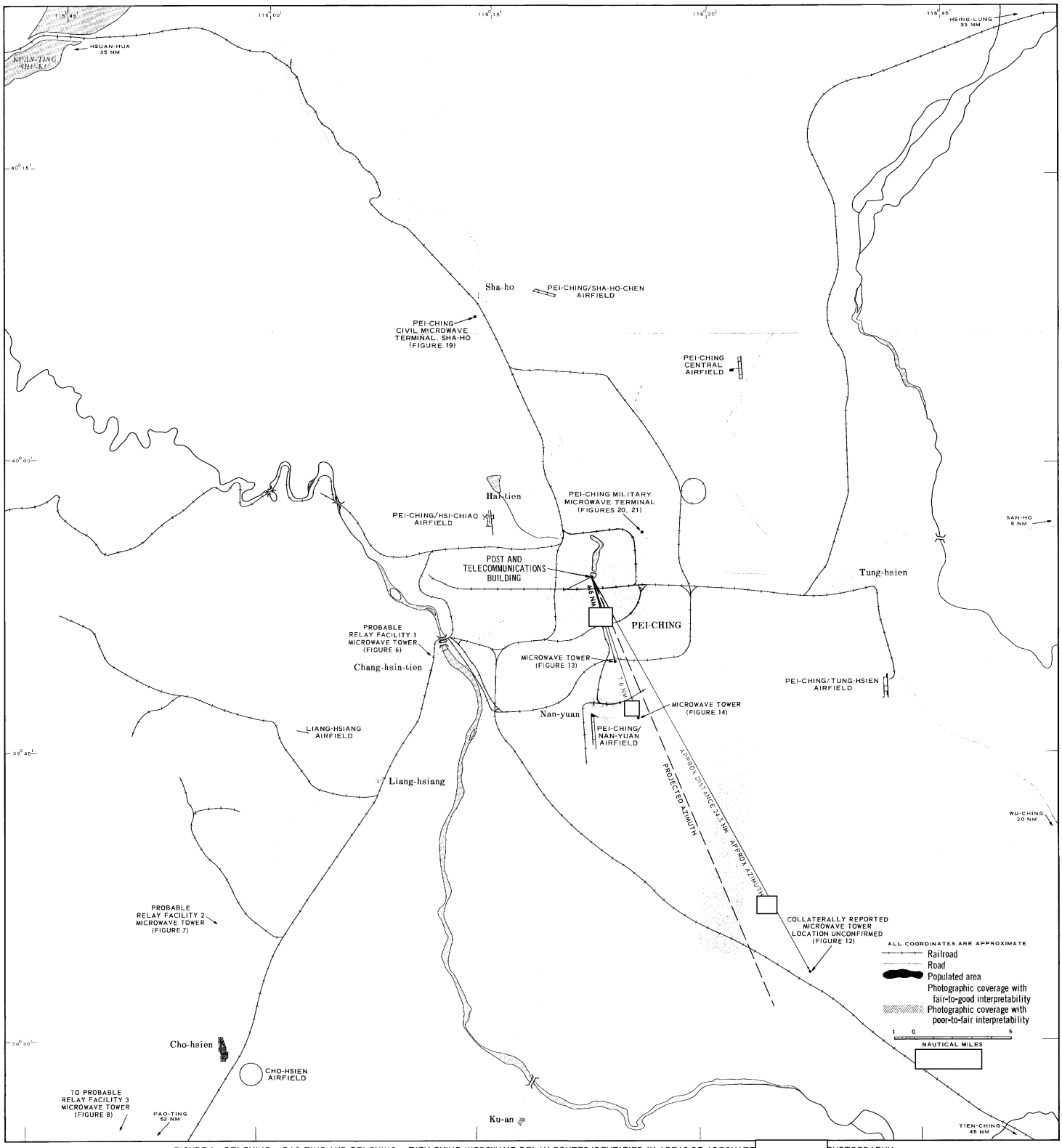

FIGURE 2. PEI-CHING – PAO-TING AND PEI-CHING – TIEN-CHING MICROWAVE RELAY ROUTES IDENTIFIED IN AREAS OF ADEQUATE PHOTOGRAPHY.

A third possible terminal facility has been identified north of Pei-ching and may be associated with a microwave route which extends north from the city of Pei-ching. However, a lack of adequate photographic coverage precludes identification of its probable correspondents.

Each of the antenna facilities associated with the microwave routes mentioned above, together with their probable correspondents, are described below. No effort has been made to project the routes beyond a significant gap in photographic coverage.

PEI-CHING – PAO-TING MICROWAVE RELAY

The Pei-ching–Pao-ting Microwave Relay Route has its Pei-ching terminal at the Post and Telecommunications Building (Figures 3 and 4) on the north side of Hsi-chang-an-chien at 39-54-25N 116-22-20E,* adjacent to the Pei-ching municipal government offices (Figure 5). The antennas associated with the Pao-ting relay are 2 parabolic dishes (Figure 4), positioned on the west side of the building, with a diameter of [redacted] above ground level. The antenna orientation based on the first probable relay facility is [redacted] Interpretability of aerial photography and lack of camera focal length data of the ground photography have precluded the determination of the tilt angle of these antennas. Analysis of the visible features and mensural data of the antennas reveals that they are probably RVG 903 UHF equipment. This analysis agrees with the previous report 1/ that RVG 903 UHF equipment was planned for this route.

The first relay facility probably uses the lattice steel self-supporting tower at 39-50-32N 116-11-48E**(Figure 6). The total tower height is 135 feet (±10 feet) or 41 meters (±3 meters). A dark area on the tower, which may be the antennas, is [redacted] above ground level. No control or tuning building is visible; however, it may be positioned under the tower and not visible on available photography. The antenna configuration, orientations, tilt angle, and dimensions could not be determined from the available photography.

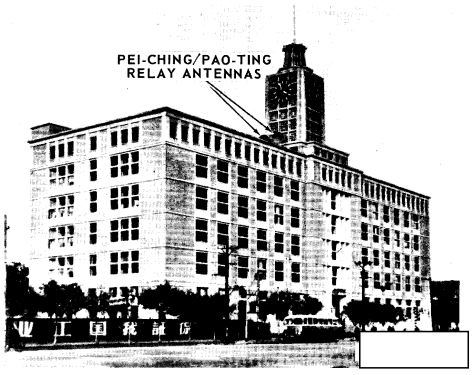

FIGURE 4. GROUND PHOTOGRAPH OF POST AND TELECOMMUNICATIONS BUILDING.

25X1 [redacted]

The probable forward azimuth of the antennas based on the second probable relay facility is [redacted] 25X1

The second probable relay facility probably uses a lattice steel self-supporting tower at 39-36-24N 115-57-39E*** with a control building immediately adjacent to the west of the tower (Figure 7). The total tower height is 105 feet (±10 feet) or 32 meters (±3 meters). The points of antenna attachment, the antenna orientations, configurations, dimensions, and tilt angle cannot be determined from available photography. The control or tuning building is [redacted] 25X1 meters). The forward azimuth of the antennas, based on the position of the third probable relay facility, [redacted] 25X1 degrees.***

*Position accuracy ± 900 feet, forward azimuthal accuracy [redacted] degree, based on DOD WGS-60 datum. 25X1

**Position accuracy ± 1,200 feet; forward azimuthal accuracy [redacted] based on DOD WGS-60 datum. 25X1

***Positional accuracy ± 2,200 feet; forward azimuthal accuracy [redacted] based on DOD WGS-60 datum. 25X1

[redacted] 25X1 25X1 25X1

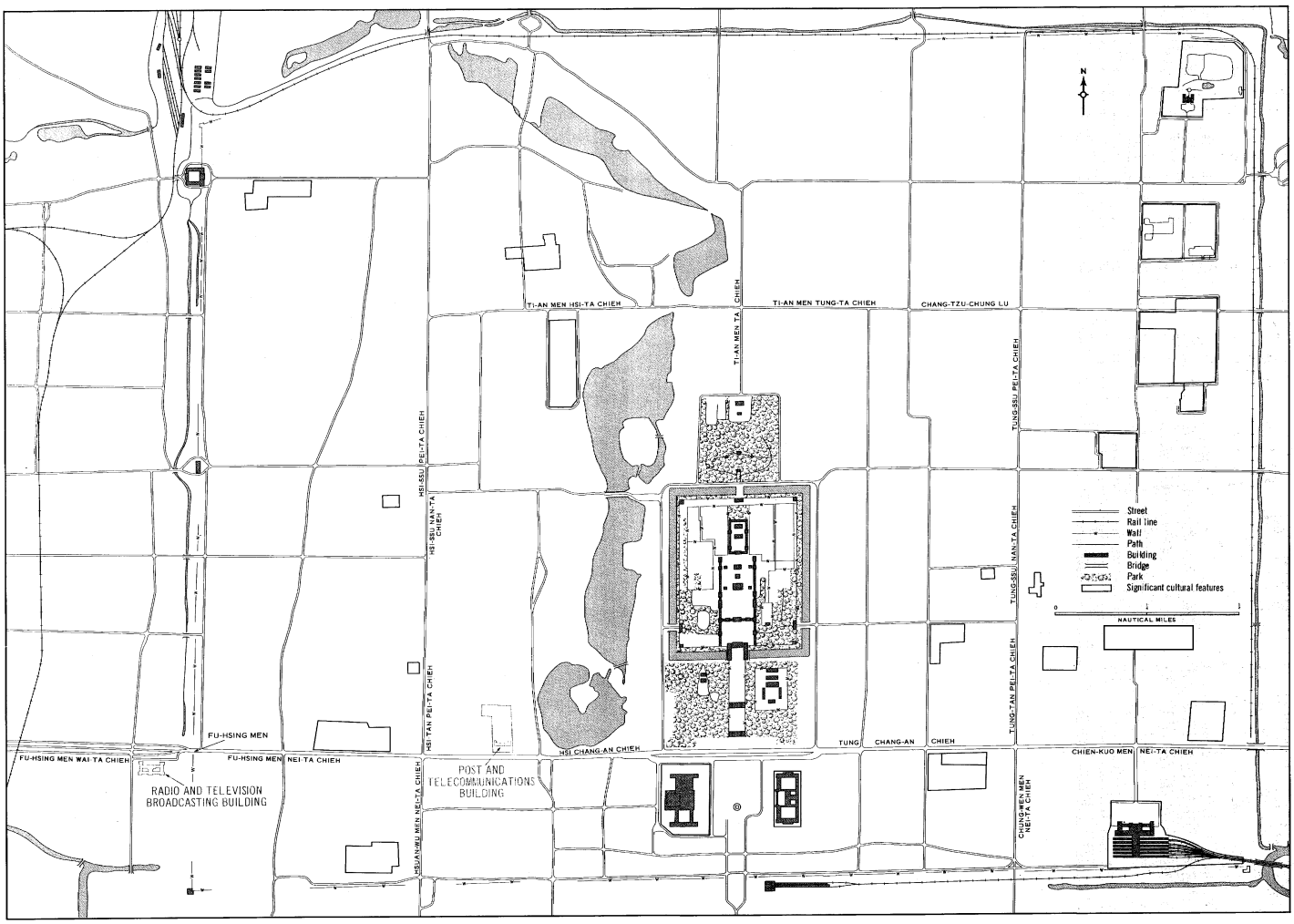

FIGURE 5. PEI-CHING CITY MAP.

The third probable relay facility uses a lattice steel self-supporting tower which has been constructed on an earth mound at 39-03-57N 115-39-58E* (Figure 8). The tower has a height of 100 feet (±10 feet) or 30.5 meters (±3 meters) and the mound has a height of approximately 20 feet or 6.1 meters. A bulge which may be the antennas is on the tower approximately 10 feet or 3 meters from the top. The antenna orientation, configuration, measurements, and tilt angle cannot be determined from available photography.

The identification of additional relay facilities along this route is precluded by the lack of adequate photographic coverage. Possibly there is an additional station between probable relay facilities 2 and 3. However, identification of such a facility is precluded by a break in the large-scale photographic coverage of the area and the small scale of the available photography which precluded measurement of the azimuths of the antennas identified on the second and third probable relay towers.

The distance between probable relay facilities 2 and 3 is beyond the usual relay operating limits, and is nearly at the extreme limits of the RVG 903 UHF equipment; however, the flat terrain, lack of obstacles, heavy industry, and other attenuating factors may allow signal relays of this distance.

Figure 2 depicts graphically the identified relay route and Table 1 summaries this relay route data.

*Positional accuracy ± 1,600 feet, based on DOD WGS-60 datum.

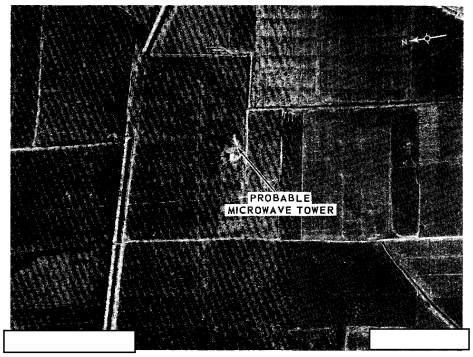

FIGURE 7. PEI-CHING – PAO-TING MICROWAVE RELAY ROUTE PROBABLE RELAY FACILITY 2.

*Table 1. Summary of the Pei-ching– Pao-ting Microwave Relay Facilities**

Name	Coordinates	Correspondent	Approximate Distance (nm)	Projected Azimuth Fwd (degree)	Projected Azimuth Back (degree)
Terminal	39-54-25N 116-22-20E	Probable Relay 1	9.2		
Probable Relay 1	39-50-32N 116-11-48E	Probable Relay 2	17.15		
Probable Relay 2	39-36-24N 115-57-39E	Probable Relay 3	35. 2		
Probable Relay 3	39-03-57N 115-39-58E	Undet	Undet		

*The accuracy of each coordinate and forward azimuth is included in the description of each facility.

PEI-CHING – TIEN-CHING MICROWAVE RELAY ROUTE

The Pei-ching – Tien-ching Microwave Relay Route appears to have its Pei-ching terminal at the Post and Telecommunications Building. Two dissimilar antennas on the east side of the building (Figures 9 and 10) are probably associated with the route.

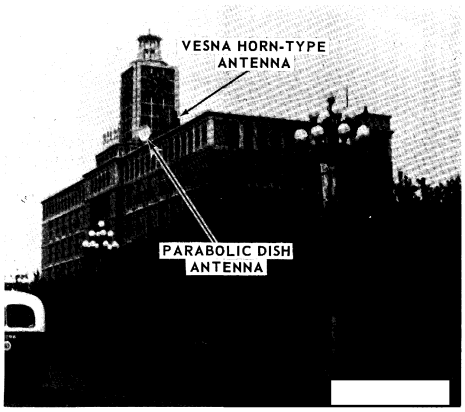

FIGURE 10. GROUND PHOTOGRAPH OF THE ANTENNAS PROBABLY ASSOCIATED WITH THE PEI-CHING – TIEN-CHING MICROWAVE RELAY ROUTE ON THE POST AND TELECOMMUNICATIONS BUILDING.

One of these antennas is a parabolic dish, diameter with a probable front feed, and mounted 145 feet or 44 meters (±5 percent) above the ground. The approximate azimuth of this antenna is The tilt angle cannot be determined from available photography. The antenna diameter indicates that the antenna may be associated with the R-404, R60/120, or the STRELA-M/T microwave systems; 2/ however, lack of detail on the available ground photography precludes identification.

The second is a horn parabolic antenna of the vesna type; however, the antenna opening is probably smaller then any similar antennas known to be in use. The antenna is mounted approximately 150 feet or 46 meters above ground level and is oriented on an azimuth of approximately Figure 11 is a line drawing of the antenna based on Figure 10. The tilt angle cannot be measured on available photography.

The correspondents of these 2 antennas cannot be determined from available photography. Two possible microwave towers have been identified on high-resolution photography along the antenna orientation axis; however, neither of these facilities appears to be equiped with vesna-type antennas. A previously reported 3/ and photographed microwave facility (Figure 12), equipped with vesna-type antennas and positioned along the projected propagation axis, is at approximately 39-33N 116-38E, is not covered on large-scale photography, and cannot be identified on photography.

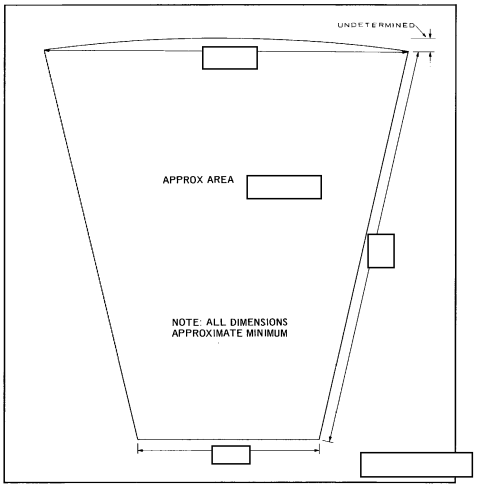

FIGURE 11. LINE DRAWING OF THE HORN ANTENNA ON THE POST AND TELECOMMUNICATIONS BUILDING.

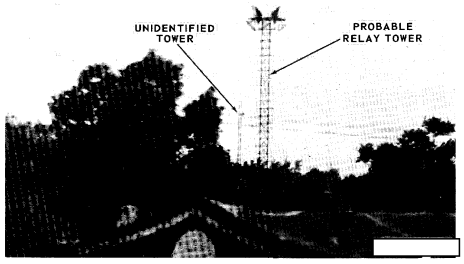

FIGURE 12. VESNA-TYPE ANTENNAS ALONG THE PEI-CHING—TIEN-CHING MICROWAVE RELAY ROUTE.

The first of the mircowave towers (Figure 13) along the approximate antenna azimuth is a self-supporting steel lattice tower at 39-48-51N 116-19-17E,* and is at an azimuth of approximatley and a distance of 4.6 nm (±0.5 nm) from the Post and Telecommunications Building. The tower is (±3 meters) high and has a large dark area which may be microwave antennas at meters (±3 meters) above ground level. This facility does not appear to be equipped with horn parabolic antennas and lacks the mounting platform. The short distance from the Post and Telecommunications Building in Pei-ching indicates that this facility is not associated with the vesna-type antenna; however, it may be associated with the unidentified dish antenna oriented in the same direction, or may be part of an unidentified microwave system. No correspondents for this antenna have been identified. The lack of extensive control and support buildings indicate that this is not a terminal facility.

*Positional accuracy ± 1,800 feet; azimuthal accuracy degrees, based on DOD WGS-60 datum.

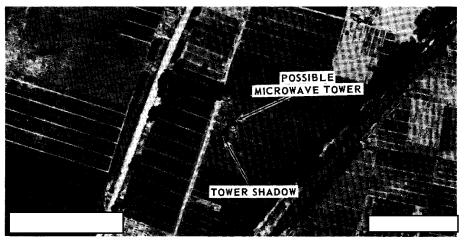

FIGURE 13. PEI-CHING – TIEN-CHING MICROWAVE RELAY ROUTE POSSIBLE RELAY FACILITY 1.

The second microwave tower (Figure 14) along this antenna axis, 7.6 nm (±0.5) from the Post and Telecommunications Building in Pei-ching, is a self-supporting steel lattice tower , is on an azimuth and is at 39-47-02N 116-25-36E.** A dark area, probably antennas, appears to be at the top of the tower. Antenna detail cannot be identified; however, no evidence of vesna-type antennas can be seen. This facility may possibly be associated with the unidentified-type dish antenna on the Post and Telecommunications Building or with an unidentified microwave relay route. This is not a microwave terminal.

It is emphasized that the 2 facilities described above are microwave; however, they cannot be definitely associated with any known microwave relay routes, and they have no known correspondents. In view of the lack of adequate photographic coverage and published information, their function remains unknown.

**Positional accuracy ± 1,800 feet; azimuthal accuracy degrees, based on DOD WGS-60 datum.

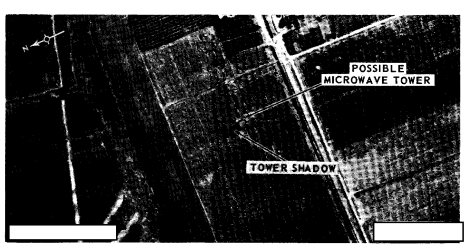

FIGURE 14. PEI-CHING – TIEN-CHING MICROWAVE RELAY ROUTE POSSIBLE RELAY FACILITY 2.

The previously reported tower 3/ appears to correspond with the vesna-type antenna on the Post and Telecommunications Building based on the azimuthal and distance relationship and the detail visible on the ground photography of the tower (Figure 12). However, lack of identification on [redacted] photography precludes an accurate evaluation of the tower. The small tower in the background of Figure 12 cannot be identified or functionally analyzed from the available photography. A summary of this relay route is graphically presented in Figure 2.

PEI-CHING RADIO BROADCASTING BUILDING

The Pei-ching Radio Broadcasting Building (Figure 15) on Fu-hsing Men Wai-ta Chieh, adjacent to Fu-hsing Men at 39-54-21N 116-20-41E,* serves as a platform and terminal facility for at least 8 microwave antennas, a television antenna, and several yagi arrays. The television antenna and the yagi arrays will be described in the third section of this report. Table 2 is a summary of the microwave antenna mensurational data. These antennas are shown in Figures 16 and 17.

Despite the small differences in the measured diameter of antennas A and B, mounted on the north side of the building, they appear to be identical. Both antennas are parabolic dishes with solid reflectors and with a feed running through the rear center of each dish. Both the antennas detail and the antenna dish diameter indicate that the antennas are similar to the R-400 antenna.

*Positional accuracy ± 1,800 feet, based on DOD WGS-60 datum.

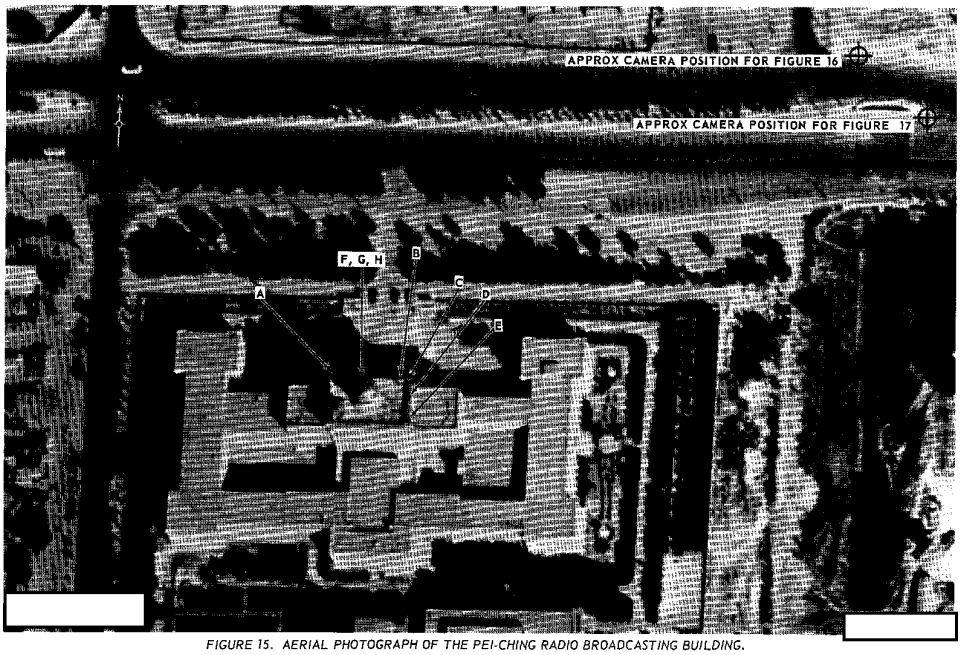

FIGURE 15. AERIAL PHOTOGRAPH OF THE PEI-CHING RADIO BROADCASTING BUILDING.

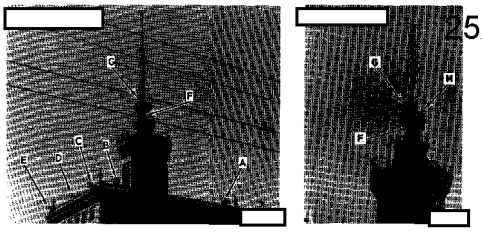

FIGURE 16. (LEFT) AND 17 (RIGHT). GROUND PHOTOGRAPHS OF THE PEI-CHING RADIO BROADCASTING BUILDING, 1965 AND 1962.

Antennas C and E, on the east side of the building, appear to be identical. Both antennas have mesh parabolic reflectors supported by 3 arms with a center feed passing through the rear center of the reflector.

Antenna D, on the east side of the building, is a parabolic dish with a feed through the rear center of the antenna. Antenna details and dimensions indicate that it is similar to the R-400 antenna.

Antennas F, G, and in 1962 H are mounted on the building tower and appear to be identical to the antennas A and B.

Due to the limitations of the available ground photography, the tilt angles of the various antennas could not be

Table 2. Pei-ching Radio Broadcasting Building Antenna Measurements (Keyed to Figures 16 and 17)

Antenna Designation	Antenna Height Above Ground Feet (±10)	Antenna Height Above Ground Meters (±3)	Dish Diameter Feet (approx)	Dish Diameter Meters (approx)	Azimuth Degrees (approx)
A	155	47.2	[redacted]		0
B	155	47.2			0
C	155	47.2			90
D	152	46.3			*
E	155	47.2			90
F	210	64.0			**
G	220	67.0			***
H	[redacted]				****

*95 degrees in 1965; antenna not observed in 1966.

**Azimuth measured on ground photography: 1962, 70 degrees; 1963, 30 degrees; 1965 and 1966, undetermined.

***Azimuth measured on ground photography: 1962, 75 degrees; 1963, [redacted] 1965, northwest quadrant; and 1966, undetermined.

****Antenna, 1962, undetermined; antenna not present, 1963 and 1965; 1966, undetermined.

25X1 measured; however, the angles of antennas F and G appear to vary on the photography of different dates. The variations in azimuths and tilt angles of the antennas on the tower indicate that they are used for relay of remotely televised events from mobile facilities to the central studio and that their orientation is changed to provide such specific coverage. The presence of antenna D in 1965 and its absence in 1966 indicates that it too served some similar purpose. Antennas C and E probably form 25X1 the link between the radio broadcasting building and the Peoples Congress Building as previously reported. 4/ These antennas, C and E, have been present since 25X1 [redacted] Antennas A and B were first observed on ground photography of [redacted] (Figure 16) and were 25X1 unchanged on ground photography of [redacted] (not 25X1 shown). No correspondents of these antennas have been identified.

The changes of some of the antenna azimuths and tilt angles, the addition and removal of some antennas together with the function of the building indicate that all of the microwave antennas on the broadcasting building are probably used to handle program material and are not usually associated with long distance relay routes.

PEI-CHING CIVIL MICROWAVE TERMINAL, SHA-HO

The Pei-ching Civil Microwave Terminal, Sha-ho (Figures 2 and 18), is at 40-07-02N 116-15-59E* and consists of a single steel self-supporting lattice tower (Figure 19) which supports a parabolic dish antenna approximately 10 feet (3 meters) in diameter. The distance from ground level to the platform which supports the antenna dish is approximately 275 feet (84 meters). Antenna orientation cannot be determined from available photography; however, it appears to be generally northerly. The tilt angle and the antenna configuration cannot be determined due to limitations of the available photography. This facility is apparently linked to Pei-ching by a pole mounted landline.

The microwave tower is in a secured compound containing a control building, a large multistoried administration-type building, 2 large storage/maintenance-type buildings, 3 unidentified multistoried buildings, a transformer building, 11 barracks-type buildings, 21 unidentified small buildings, a pumphouse, a water tower, and an open storage area.

The complexity of the facilities within the secured compound indicates that several functions other than microwave communications are served; however, no further identification of function can be made from the available photography or published information.

*Positional accuracy ± 3,000 feet, based on DOD WGS-60 datum.

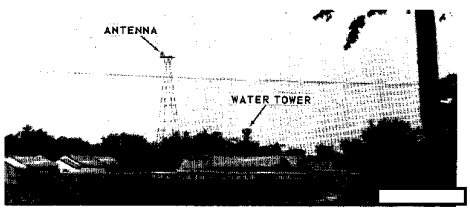

FIGURE 19. GROUND PHOTOGRAPH OF THE PEI-CHING CIVIL MICROWAVE TERMINAL, SHA-HO.

This facility cannot be associated with any known microwave relay route and no correspondents have been identified due to the lack of adequate photographic coverage. 25X1

PEI-CHING MILITARY MICROWAVE TERMINAL

The Pei-ching Military Microwave Terminal was at 39-57-09N 116-26-15E (Figure 2) and consisted of a single self-supporting steel lattice tower which probably supported an undetermined number and type of microwave antennas. This facility, which was within a secured military compound, was first observed on photography of [redacted] (Figure 20) and was present as late as photography of [redacted] However, on photography of [redacted] (Figure 21), the tower had been disassembled and was represented by 3 stacks of materials on the ground. The leg bases were still identifiable on [redacted] photography. No subsequent high-resolution photography is available which will permit the determination of the construction/destruction status of the tower. 25X1 25X1 25X1 25X1

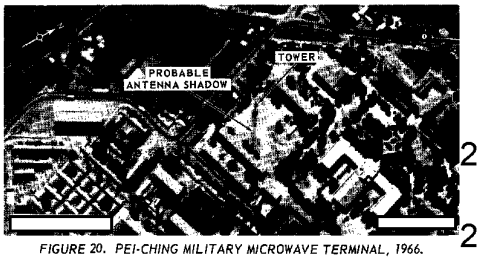

FIGURE 20. PEI-CHING MILITARY MICROWAVE TERMINAL, 1966.

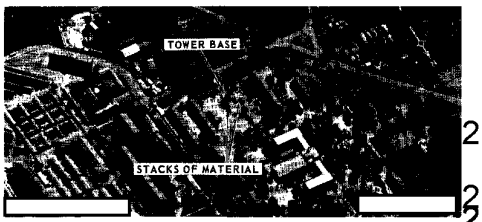

FIGURE 21. PEI-CHING MILITARY MICROWAVE TERMINAL, 1967.

MAPS OR CHARTS

ACIC series, scale 1:200,000

ACIC series, scale 1:100,000

AMS series, scale 1:250,000

Cartographic Publishing House, *Tourist Map of Peking,* no date, (UNCLASSIFIED)

AMS, Photo Mosaic, sheet 40740, May 62 (SECRET

AMS, Photo Mosaic, sheet 40742, May 62 (SECRET

DOCUMENTS

2. Bunin, D.A., *Radiorelejnaya Svyazna Zheleznodorozhnom Transporte,* Moskva, 1961 (UNCLASSIFIED)

3. DOD, Moskva. *Far East Tour: Hong Kong-Canton-Peking-Irkutsk-Moscow,* Oct 66 (SECRET

4. CIA. NIS-39 A, Section 38, *Communist China, Telecommunications,* Jan 65 (SECRET/

REQUIREMENT

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